

On increasing the precision of ...

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The first two sums in the right-hand member of Eq.(3) represent the error introduced on account of the fact that the values utilized in the computations are determined approximately in the preceding stages, while the calculations according to Eq.(1) are connected with the necessity of rounding off the values. The remaining last terms of the right-hand member of expression (3) represent the error of approximation at step h . Formula (1) makes it possible to compute the values of the requisite function with precision up to some t -th term of the Taylor series, and therefore upon expanding the quantities $Y(x_n + \alpha_{ki}h)$, $Y(x_n + h)$ in power series about the point x_n , and appropriate transformations, the general expression for the round-off and approximation error (3) may be represented in the form:

$$\delta(x_n + h) = \sum_{k=p}^{\infty} \sum_{i=1}^{m_k} h^k c_{ki} \delta^{(k)}(x + \alpha h) + \sum_{\mu=t+1}^{\infty} (K_{\mu}^{-1}) \frac{h^{\mu}}{\mu!} Y^{(\mu)}(x_n), \quad (4)$$

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where $k=p$ $i=m_k$

$$K_{\mu} = \sum_{k=0}^{\infty} \sum_{i=1}^{\infty} C_{ki} \alpha_{ki}^{\mu-k} (\mu - k + 1)(\mu - k + 2) \dots (\mu - k + k) \quad (5)$$

The coefficient K_{μ} defines the error in the coefficients of the derivatives of the terms of the expansion of the value of the requisite function $\bar{Y}(x_n+h)$ as determined by Eq.(1) in terms of a power series about the point x_n . If the solution of the given differential equation is determined at each step by N different formulae of the form (1) differing from each other by various combinations of the values of the coefficients α_{ki} utilized, then, in the general case, at each step the N different computational formulae with differing values of the approximation and round-off error make it possible to compute N different values of the requisite function $Y_{\nu}(x_n+h)$. On the basis of Eqs. (1) and (4) one writes the system of algebraic equations:

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$$Y_v(x_n + h) = \bar{Y}(x_n + h) + \sum_{k=0}^{k=p} \sum_{i=1}^{i=m_k} h^k \delta^{(k)}(x_n + \alpha_{ki}h) + \sum_{\mu=t}^{\mu=t+1, \dots} (K_{v\mu}^{-1}) \frac{h^\mu}{\mu!} \bar{Y}^\mu(x_n) \quad (6) \quad f$$

The system of linear algebraic equations (6) allows one to find a new approximation to $\bar{Y}(x_n+h)$ using $N - 1$ unknown values of δ_{ki} , $\bar{Y}^\mu(x_n)$. The example considered deals with increasing the precision of the results of the numerical integration of ordinary differential equations of the first order, when the value of the requisite function and its first derivative are known at the points x_n , x_{n-1} , x_{n-2} . In that case the differential equation may be solved by means of 109 different extrapolation and interpolation formulae. By using these formulae at each step it

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is possible to compute different values of $Y_v(x_n + h)$ and to write a system of equation of the form (6). The system of linear algebraic equations thus obtained makes it possible to find the new approximate value of $\bar{Y}(x_n + h)$ by the use of the unknowns $\delta_n, \delta_{n-1}, \delta_{n-2}, \delta'_n, \delta'_{n-1}, \delta'_{n-2}, \delta'_{n+1},$

$\bar{Y}_n^{(II)}, \bar{Y}_n^{(III)}, \dots, \bar{Y}_n^{(102)}.$

Abstractor's note: Complete translation.

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S/196/62/000/009/001/018
E114/E184

AUTHOR: Gol'tsov, N.A.

TITLE: Determination of error in numerical integration of differential equations by the extrapolation-interpolation method

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika, no.9, 1962, 5-6, abstract 9 A27. (Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti, no.20, 1961, 211-215)

TEXT: Formulae for numerical integration of ordinary differential equations by the extrapolation-interpolation method are of the following form:

$$Y(x_n + h) = \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} Y^{(k)}(x_n + \alpha_{ki} h), \quad (1)$$

$m_k = m_0, m_1, m_2, \dots, m_p$, where p is the order of magnitude of the highest derivative of the required function, which was used in the calculations; m_k - number of derivatives of the k -th order

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of accuracy used in the calculations; C_{ki} - coefficients indicating the weight of the derivatives. The total error in calculating the required function is given as a difference in the form:

$$\delta_j^{(k)} = y_j^k - \bar{y}_j^{(k)} \quad (2)$$

where: y_j^k - quantities calculated by means of Eq.(1) and figuring in the calculations; \bar{y}_j^k - the true value of the quantities used in the calculations. Based on Eq.(2), we obtain:

$$y^{(k)}(x_n + \alpha_{ki}h) = \delta^{(k)}(x_n + \alpha_{ki}h) + \bar{y}^{(k)}(x_n + \alpha_{ki}h), \quad (3)$$

$$\delta(x_n + h) = y(x_n + h) - \bar{y}(x_n + h). \quad (4)$$

By substituting Eqs. (1) and (3) into Eq.(4) a general expression is obtained for the error corresponding to an increment h :

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$$\delta(x_n + h) = \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \delta^{(k)}(x_n + \alpha_{ki} h) + \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \bar{Y}^{(k)}(x_n + \alpha_{ki} h) - \bar{Y}(x_n + h) \quad (5)$$

The first two sums in the right hand part of Eq.(5) represent the error which occurs because the values used in the calculations were previously determined only approximately, and because the calculations using Eq.(1) necessitate rounding-off the calculated values. The remaining terms of the right-hand part of Eq.(5):

$$\sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \bar{Y}^{(k)}(x_n + \alpha_{ki} h) - \bar{Y}(x_n + h) = Q \quad (6)$$

represent the error through the approximation for the increment.
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The items forming the error due to approximation can be expanded by powers relative to x_n :

$$Q = \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \sum_{\mu=0}^{\infty} \frac{(\alpha_{ki} h)^\mu}{\mu!} \bar{Y}^{(k+\mu)}(x_n) - \sum_{\mu=0}^{\infty} \frac{h^\mu}{\mu!} \bar{Y}^{(\mu)}(x_n) \quad (7)$$

If formula (1) allows calculating the values of a function $Y(x_n + h)$ with accuracy up to the t -th term of Taylor's series, then in expression (7) all the terms containing derivatives up to the $(t-1)$ -th order will disappear:

$$Q = \sum_{\mu=t, t+1}^{\infty} \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \frac{(\alpha_{ki} h)^{\mu-k}}{(\mu-k)!} \bar{Y}^{(\mu)}(x_n) - \sum_{\mu=t}^{\infty} \frac{h^\mu}{\mu!} \bar{Y}^{(\mu)}(x_n). \quad (8)$$

To make it more explicit and convenient the expression for the error of approximation (8) is re-written:

$$Q = \sum_{\mu=t}^{\infty} \{K_\mu - 1\} \frac{h^\mu}{\mu!} \bar{Y}^{(\mu)}(x_n), \quad \text{where}$$

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$$K_{\mu} = \sum_{k=1}^p \sum_{i=1}^{m_k} C_{ki} \alpha_{ki}^{\mu-k} (\mu - k + 1)(\mu - k + 2) \dots (\mu - k + k).$$

The coefficient K_{μ} determines the distortion of the coefficients of the derivative terms in the expansion by powers relative to the cusp, x_n , of the expression for the value of the sought function $Y(x_n + h)$, found with the help of Eq.(1). The general expression for the error of approximation and rounding-off in the increment is given in the form:

$$\delta(x_n + h) = \sum_{k=0}^p \sum_{i=1}^{m_k} h^k C_{ki} \delta^{(k)}(x_n + \alpha_{ki} h) + \\ + \sum_{\mu=t}^p (K_{\mu} - 1) \frac{h^{\mu}}{\mu!} Y^{\mu}(x_n).$$

The found expression for the errors of approximation and
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rounding-off allows us to compare computation formulae of the same order of accuracy, to check and make more accurate the results of numerical integration of the differential equations. There is 1 reference.

[Abstractor's note: Complete translation.]

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A060/A000

AUTHOR: Gol'tsov, N. A.

TITLE: On a procedure for the numerical integration of differential equations reducible to the form $Y' = f(Y)$

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 32 - 33, abstract 12V168 (Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti, 1961, no. 23, 278 - 280)

TEXT: A procedure is considered for the numerical integration of differential equations of the form

$$Y' = f(Y); \quad Y'(X_0) = Y'_0,$$

in which the accumulation of errors occurs along the axis of abscissae (the axis of the values of the argument). The value of the unknown function Y_{n+1} is determined from extrapolation formulae. This calculated value of the function is then considered as its actual value and one then finds with greater precision the value of the argument $x_n + h'_n$, at which the unknown function takes the value Y_{n+1} . The

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computational formula obtained for determining the value of the higher approximation step h_n^1 is of the form

$$h_n^1 = \frac{2hf(Y_n)}{f(Y_n) + f(Y_{n+1})}$$

I. F. Shelikhova

[Abstracter's note: Complete translation]

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S/044/62/000/012/034/049
A060/A000

AUTHOR: Gol'tsov, N.A.

TITLE: Generalized procedure for the derivation of formulae for the interpolation-extrapolation method of numerical integration of ordinary differential equations

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1962, 32, abstract 12V167 (Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti", 1961, no. 23, 281 - 286)

TEXT: A procedure is considered for the derivation of formulae for the numerical integration of differential equations of the P-th order

$$\frac{d^P Y}{dx^P} = f(X, Y, Y', Y'', \dots, Y^{(P-1)})$$

for $Y(X_0) = Y_0, Y'(X_0) = Y'_0, \dots, Y^{(P-1)}(X_0) = Y_0^{(P-1)}$. It is indicated that the problem of deriving the formulae reduces to the determination of the coefficients of the finite functional series of the form

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$$y^s (x_n + \beta h) \sum_{K=0}^{K=r} \sum_{i=1}^{i=m} h^{K-s} c_{Kis} y^{(K)} (x_n + \alpha_{Kis} h),$$

$$s = 0, 1, 2, \dots, r; m_K = m_0, m_1, m_2, \dots, m_r,$$

where r is the order of the highest derivative, m_K is the number of derivatives of the same order. The coefficients of the series are found from the system of equations

$$\sum_{K=0}^{K=r} \sum_{i=1}^{i=m_K} c_{Kis} \frac{\alpha_{Kis}^{l_s-K-1}}{(l_s - K - 1)!} = \frac{\beta^{l_s-s-1}}{(l_s - s - 1)!}$$

$$l_s = 1, 2, 3, \dots, m_0 + m_1 + \dots + m_p, \dots, q_s;$$

q_s is the greatest number of equations for which the solution of the system can be found. An example is cited. There are 6 references.

I.P. Shelikhova

[Abstracter's note: Complete translation]

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AUTHOR: Gol'tssov, N.A.

TITLE: Concerning a circuit of series-connected impedances
at voltage resonance

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika,
no.18, 1962, 7-9, abstract 18 A 38. (Nauchn. tr. Mosk.
tekhnol. in-t legkoy prom-sti, no.23, 1961, 287-290).

TEXT: The possibilities of resonant circuits for trans-
forming alternating voltages are considered. Figs. 1 and 2 give
diagrams of resonant circuits for transforming the voltage U_1
into the voltage $U_2 = KU_1$ on a load $Z = R + jX$. For the
transformation circuits shown in Figs 1 and 2, the voltages U_{21}
and U_{22} on the load Z are given in the form:

$$U_{21} = U_1 K_1; \quad U_{22} = U_1 K_2, \quad (1)$$

where: .

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$$K_1 = \sqrt{\frac{R_{\beta 1}^2 + X_{\beta 1}^2}{(R_{L1} + R_{\beta 1})^2 + (X_{L1} - X_{\beta 1})^2}} ; \quad K_2 = \sqrt{\frac{R_{\beta 2}^2 + X_{\beta 2}^2}{R_{\beta 2}^2 + (X_{\beta 2} - X_{c2})^2}}$$

$$R_{\beta 1} = \frac{RX_{c1}^2}{R^2 + (X_{c1} - X)^2} ; \quad X_{\beta 1} = \frac{X_{c1} (R^2 + X^2) - X X_{c1}^2}{R^2 + (X_{c1} - X)^2} ;$$

$$R_{\beta 2} = \frac{(R + R_{L2}) \cdot (RR_{L2} - XX_{L2})}{(R + R_{L2})^2 + (X + X_{L2})^2} + \frac{(X + X_{L2}) \cdot (RX_{L2} + XR_{L2})}{(R + R_{L2})^2 + (X + X_{L2})^2} ;$$

$$X = \frac{(R + R_{L2}) \cdot (RX_{L2} + XR_{L2})}{(R + R_{L2})^2 + (X + X_{L2})^2} - \frac{(X + X_{L2}) \cdot (RR_{L2} - XX_{L2})}{(R + R_{L2})^2 + (X + X_{L2})^2} ;$$

A condition of transforming the voltage U_1 into the vol e_{L2}

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by means of the circuits of Figs. 1 and 2 is that the coefficients K_1 and K_2 must be of the required values. In Eqs. (1) and (2), K_1 and K_2 are termed the transformation coefficients. The laws of change of the reactances X_C and X_L necessary to ensure transformation of the voltage U_1 with a given value of the coefficient K and resonance voltage on change in the load Z are determined. Values of the reactances X_{L1} and X_{C1} (see Fig.1) are determined from the equation:

$$K_1 = \frac{\sqrt{R_{\beta 1}^2 + X_{\beta 1}^2}}{R_{L1} + R_{\beta 1}}, \quad X_{L1} = X_{\beta 1},$$

which are converted to the form:

$$X_{L1} = X_{\beta 1}, \quad a_4 X_{C1}^4 + a_3 X_{C1}^3 + a_2 X_{C1}^2 + a_1 X_{C1} + a = 0,$$

$$\text{where: } a_4 = K_1^2 (R_{L1}^2 + 2R_{L1}R + R^2) - R^2 - X^2;$$

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$$a_3 = 2X(R^2 + X^2) - 4K_1^2 R_{L1} X(R_{L1} + R);$$

$$a_2 = 2K_1^2 R_{L1}(R_{L1}R^2 + 3R_{L1}X^2 + R^3 + RX^2) - (R^2 + X^2)^2;$$

$$a_1 = -4K_1^2 R_{L1}^2 X(R^2 + X^2);$$

$$a = K_1^2 R_{L1}^2 (R^4 + 2R^2 X^2 + X^4).$$

The reactances X_{L2} and X_{c2} of the circuit of Fig. 2 are determined from the equations:

$$K_2 = \sqrt{1 + \left(\frac{X_{j2}}{R_{j2}}\right)^2}, \quad X_{c2} = X_{j2}.$$

which are converted to the form:

$$b_4 X_{L2}^4 + b_3 X_{L2}^3 + b_2 X_{L2}^2 + b_1 X_{L1} + b = 0,$$

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$$X_{c2} = \frac{XX_{L2}^2 + (X^2 + R^2) X_{L2} + R_{L2}^2 X}{(R + R_{L2})^2 + (X + X_{L2})^2}$$

where

$$b_4 = X^2 - R^2(K_2^2 - 1); \quad b_3 = 2X(X^2 + R^2);$$

$$b_2 = (X^2 + R^2)^2 + 2X^2 R_{L2}^2 - 2R [X^2 R_{L2} + RR_{L2}] X (K_2^2 - 1);$$

$$b_1 = 2XR_{L2}^2 (X^2 + R^2);$$

$$D = R_{L2}^4 X^2 - [X^2 R_{L2} + RR_{L2} (R + R_{L2})]^2 (K_2^2 - 1).$$

Values of the reactances X_{c1} , X_{L1} , X_{c2} and X_{L2} can be determined after the solution of fourth-power algebraic equations. Neglecting reactor losses and taking $R_L = 0$ for the case of pure resistive load $Z = R$, approximate expressions for the reactances may be found from the equations:

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$$X_{c1} \cong \frac{R}{\sqrt{K_1^2 - 1}}; \quad X_{L2} \cong \frac{R}{\sqrt{K_2^2 - 1}};$$

$$X_{L1} \cong \frac{R \sqrt{K_1^2 - 1}}{K_1^2}; \quad X_{c2} \cong \frac{R \sqrt{K_2^2 - 1}}{K_2^2}.$$

The resonant circuits of Figs. 1 and 2 are particularly convenient for voltage transformation over wide ranges to supply loads of constant or only slightly varying power.
4 references.

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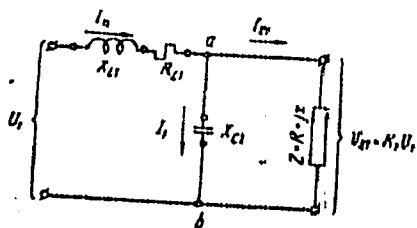


Fig. 1

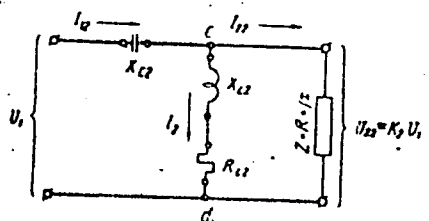


Fig. 2

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[Abstractor's note: Complete translation.]

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AUTHOR: Gol'tsov, N.A.
TITLE: On a procedure for the numerical integration of differential equations reducible to the form $Y' = f(Y)$
PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.20, 1962, 6-7, abstract 20 A 34. (Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti, no.23, 1961, 278-280).
TEXT: A method is set forth for the numerical integration of ordinary differential equations $Y' = f(Y)$. Extrapolation formulae are used to determine the values of the requisite function Y_{n+1} . This calculated value of the function is then considered as its actual value and the value of the argument $x_n + h'_n$ at which the requisite function takes the value Y_{n+1} is then corrected. The methods of Runge-Kutta, Adams-Shtermer, and others, developing Euler's idea on the numerical integration of differential equations, now in use for that purpose made it possible, for a
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sufficiently small value of the interval h , to approach the approximate new value of the requisite function $Y(x_n + h)$. In calculating every successive value of the requisite function there occurs an accumulation of errors along the ordinate axis (along the axis of values of the function, see Fig.1). The calculated values of the function differ from those which may be taken by the requisite function. This fact impels one to seek a procedure for the numerical integration of differential equations in which the accumulation of errors would occur along the axis of abscissas (along the axis of values of the argument, see Fig.2), and not along the axis of values of the function. The use of such a procedure would ensure an approximate solution distinguished by the fact that for every argument the value of the function may be determined with an error, but along all the calculated values of the requisite function there will be no actually inexistent (extraneous) ones. In other words, if according to the calculations the function $Y(x_n + h)$ occurs at $x_n + h$, in actuality this value of the function will occur at $x_n + h'$. In that case the axis of abscissas (the axis of the argument x) turns out to be

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deformed beyond the assumptions adopted in the calculations.
Fig.1 gives a representation of the requisite function in the
presence of error accumulation from calculations along the axis
of abscissas. To use the "intuitive" terminology adopted above,
in the use of Euler's method and its adaptations it is the axis
of ordinates (the axis of the values of the function) that is
deformed, as shown in Fig.2. ✓

1 reference.

[Abstractor's note: Complete translation.]

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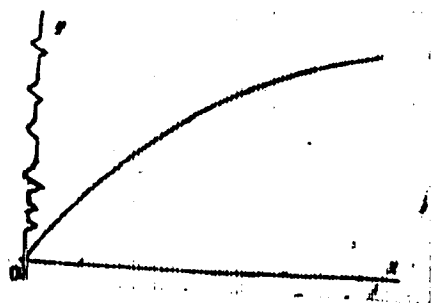


Fig.1

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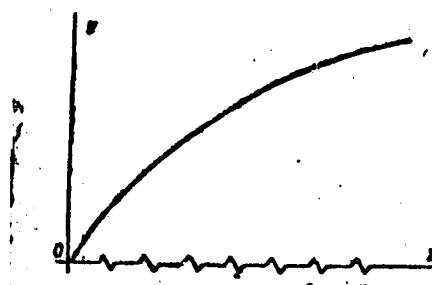


Fig.2

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AUTHOR: Gol'tsov, N.A.

TITLE: A generalised procedure for deriving formulae for the extrapolation-interpolation method of numerical integration of ordinary differential equations

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika, no.20, 1962, 6, abstract 20. A 33. (Nauchn. tr. Mosk. tekhnol. in-t legkoy prom-sti, no.23, 1961, 281-286). ✓/A

TEXT: A method is considered of deriving formulae for the numerical integration of differential equations

$$\frac{d^p y}{dx^p} = f(x, y, y', y'', \dots, y^{(p-1)})$$

when

$$y(x_0) = y_0; \quad y'(x_0) = y'_0, \dots, y^{(p-1)}(x_0) = y^{(p-1)}_0.$$

It is assumed that the existence of the requisite integral is
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established in advance. For the numerical integration it is
proposed to utilise a function series of the form

$$Y^{(s)}(X_n + \beta h) = \sum_{\substack{K=s \\ i=1}}^{m_K} h^{K-s} C_{Kis} Y^{(K)}(X_n + \alpha_{Kis} h);$$

$m_K, m_0, m_1, m_2, \dots, m_p, \dots, m_r$;

$S = 0, 1, 2, \dots, p-1, \dots, r-1$,

where: r is the order of the highest derivative occurring in the calculations; m_K is the number of derivatives of the same order occurring in the calculations. The formulae of the extrapolation-interpolation methods of numerical integration for the differential equations being considered are represented in the form of a finite function series whose coefficients are determined in the simplest

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way from the systems of equations obtained as result of equating the sums of the coefficients of the derivatives of the same order after expanding the terms of the power series, to the coefficients of the corresponding first terms of the Taylor series:

$$\sum_{k=1}^{\ell_s} C_{Kis} \cdot \frac{\ell_s - K - 1}{(\ell_s - K - 1)!} = \frac{1}{(\ell_s - 1)!}$$

$$s = 0, 1, 2, \dots, p - 1, \dots, r - 1;$$

$$\ell_s = s + 1, s + 2, s + 3, \dots, q_s.$$

where q_s is the greatest number of equations for which the solution of the system can be found. The problem of deriving the formulae for the numerical solution of ordinary differential

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equations of the order P thus formed reduces to the determination of the coefficients C_{Kis} of the series by means of algebraic equations. When the coefficients a_{Kis} are preselected the coefficients C_{Kis} of the series are determined from the systems of algebraic equations which are in that case linear. As an application of the elaborated method, a table is constructed in which, besides the known formulae, new ones are given.
5 references.

[Abstractor's note: Complete translation.]

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GOL'TSOV, N.A., kand.tekhn.nauk, dotsent

Network for the series connection of resistances in the presence
of voltage resonance. Nauch.trudy MTILP no.23:287-290 '61.
(MIRA 15:9)

1. Kafedra elektrotekhniki Moskovskogo tekhnologicheskogo
instituta legkoy promyshlennosti.
(Electric networks)

GOL'TSOV, N.A., kand. tekhn. nauk. dotsent

Equation for a generalized electric machine with a nonsinusoidal
distribution of the magnetomotive force of winding. Nauch.
trudy NTILP no.24:271-275 '62. (MIRA 16:7)

1. Kafedra elektrotehniki Moskovskogo tekhnologicheskogo
instituta legkoy promyshlennosti.
(Electric machinery)

GOL'TSOV, N.A., kand. tekhn. nauk, dotsent

More precise definition of the results in the numerical
integration of differential equations. Nauch. trudy MTILP
no.26:264-269 '62. (MIRA 17:5)

1. Kafedra elektrotekhniki Moskovskogo tekhnologicheskogo
instituta legkoy promyshlennosti.

GOL'TSOV, V.

Meeting of friends. Grashd.av.13 no.6:30 Je '56. (MIRA 9:9)
(Russia--Relations (General) with Czechoslovakia)(Czechoslovakia--
Aeronautics, Commercial)

GOL'TSOV, V.

Test pilots. Grashd.av.13 no.7:8-9 J1 '56. (MIRA 9:9)
(Airplanes--Testing)

GOL'tsov, V.

84-5-5/42

AUTHOR: Gol'tsov, V.

TITLE: Growth of Creative Effort (Rastet tvorcheskiy pod'yem)

PERIODICAL: Grashdanskaya Aviatsiya, 1957, Nr 5, pp. 5-6 (USSR)

ABSTRACT: Sverdlovsk airport has become a large airway junction in recent years. A new terminal and a hotel have been built. The equipment meets all modern requirements and permits receiving and maintaining, day and night, all types of heavy transport aircraft including the Tu-104. Passenger turnover has tripled, and freight volume increased 5 times in 1956 over the 1946 figures. During the exceptionally stormy and unstable winter of 1956/57 the airport was never closed thanks to good airfield maintenance. The most efficient crews are those headed by M. Ivanov, A. Semenets, and A. Manin. Head of Shipping Department Ye. Slutskiy is credited with 91.5 per cent of average payload attained. The most efficient technical brigades are those under F. Vorob'yev, L. Syskov, F. Payvin, and G. Morozov. Engineer L. Nikanorov is credited with introducing a special crane for removing engines from the Il-12 and Il-14 aircraft, which increases labor productivity by 40 per cent. In collaboration with F. Vorob'yev he designed a reducer, which shortens the fueling time of the Tu-104 by 15 to 20 minutes. G. Morozov's brigade utilized the hydraulic wheel-retractors of the Il-14 aircraft for trimming the Li-2 plane. A special articulated wrench designed by L. Syskov permits replacing

Card: 1/3

84-5-5/42

Growth of Creative Effort (cont.)

the spark-plugs of the ~~AI-824~~ engine in half the time. The flight unit of the airport overfulfilled the quota of flight hours by 11.2 per cent and that of ton/kilometers by 14.6 per cent for the first quarter of 1957. The flight productivity quota also was overfulfilled. The maintenance workshops saved 30,700 rubles by cost reduction. The beginning of the second quarter in Sverdlovsk airport is characterized by the following percentages of quota fulfillments: volume of shipment in tons - 119, freight turnover - 114, passenger turnover - 150. Winners of the socialist competition were teams under Medvedev, Troitskiy, and Kushnir. At present the cost of a ton/kilometer is still 4 per cent higher than the quota. The support of the Territorial Administration, specifically of its Economic Planning Department, is invoked to reduce cost. The writer argues that because of increase of the flying personnel and the reduction in wage funds, an overexpenditure of 3 kopecks per ton/kilometer results. The consistency of planning, therefore, is questioned. The volume of mail planned for Sverdlovsk airport by the West Siberian Territorial Administration considerably exceeds the needs of the Ministry of Communications. In addition, during the slush period, when many airports linked with Sverdlovsk are

Card: 2/3

84-5-5/42

Growth of Creative Effort (cont.)

closed, the mail is forwarded by rail. Tariffs and fares on main routes operated from Sverdlovsk have been reduced, which is expected to result in an increase of freight and passenger turnover and lead to a further improvement of efficiency indices.

AVAILABLE: Library of Congress

Card: 3/3

GOL'TSOV, V.

84-9-33/47

AUTHOR: Gol'tsov, V., Special Correspondent

TITLE: That Which Was Left Undone (O tom, chto ne dovedeno do kontsa)

PERIODICAL: Grashdanakaya Aviatsiya, 1957, Nr 9, pp. 31-32

ABSTRACT: The article criticizes conditions at the Riga and Vil'nyus airports and gives some information on these two airports. The Riga airport is located NW of the city; traffic has increased considerably during the last several years and daily tens of planes arrive and depart from this place. Recently the airport received the Il-14 planes. From here passengers may fly directly to Moscow, Leningrad, Tallin, Vil'nyus, Kaliningrad, Minsk, Tbilisi, Mineral'nyye Vody, Odessa, etc., and also to Copenhagen. The airport is equipped with overnight facilities for transit (stopover) passengers, and has a nursery, a restaurant, and a post and telegraph office. The city agency of the Aeroflot is on Raynis Boulevard in the central section of the city. Buses run to the airport every 10-15 minutes. The passenger traffic is particularly heavy during summer months, when thousands of people visit Riga's beaches. The article complains that the city agency of the Aeroflot has only two employees: Pavel Alekseyevich Rudakov, chief of the agency, and M. Pleshanova (a woman), the cashier. As a result,

Card: 1/2

84-9-33/47

... result of fulfilling the ton/km quota, prefers the transport of cargo for long distances and cares less for passengers travelling to nearby localities. The procedure of selling tickets involves red tape: it is necessary to fill a form, register the calculations in the books and write out the ticket. The registration of military passengers is even more complicated. As a result,

GOL'TSOV, V. (gor. Odessa).

Principal merit; Report about an agency. Grashd. av. 14 no.3:27-
28 Mr '57. (MLRA 10:6)

(Aeronautics, Commercial)

ODOL'SOV, V. (Riga)

Young specialists. Orazhd.av. 14 no.7:11-12 J1 '57. (MLRA 10:9)
(Aeronautics--Study and teaching)

84-58-2-19/46

AUTHOR: ~~Gol'tsov, V.~~

TITLE: A Civilized Way of Work (Kul'tura truda)

PERIODICAL: Grazhdanskaya aviatsiya, 1958, Nr 2, pp 11-13 (USSR)

ABSTRACT: The article describes in some detail the work organization, equipment, and methods of overhauling An-2 planes in an unidentified maintenance and repair establishment. Special sorting carts, designed to carry sets of disassembled parts have been introduced. These carts follow a predetermined route from one work place to another for certain operations. Another set of carts and boxes carry standardized sets of tools used at certain work places. There is a moving line for washing operations following the disassembly. Labor-consuming operations are mechanized, work places are well equipped and organized. Much effort has been spent to attain a neat appearance of the shop and individual work places. On-the-job training of personnel, as well as its general education, is well organized and greatly encouraged. The result is characterized by the following percentages of quota overfulfillments for 1957: in overall output - by 28.5 percent,

Card 1/2

84-58-2-19/46

A Civilized Way of Work

in manufacture of replacement parts in the plant - by 30.6 percent, in the number of manufactured items - by 8.3 percent, in the efficiency increment - by 22 percent, in reduction of cost - by 7.5 percent. Accrual of above-the-quota savings amounted to 1,019,000 rubles. The text is accompanied by a number of photographs, one of which shows an overall interior view of the hangar with airframes, the other 9 ~~presenting~~ individual items of equipment.

AVAILABLE: Library of Congress

Card 2/2

1. Airplanes - Maintenance - USSR
2. AN-2(Airplane)-USSR

GOL'TSOV, V.

In the sky of Moldavia. Grazhd. av. 15 no. 7:17-18 J1 '58.
(MIRA 11:7)

(Moldavia--Aeronautics in agriculture)

BOL'TSOV, V.; RAJABANOV, P.

To petroleum workers of the Caspian Sea. Grashd.av 17 no.9:18-19
8 '60, (MIRA 13:9)

1. Spetsial'nyye korrespondenty zhurnala "Grashdanskaya aviatsiya."
(Caspian Sea region—Aeronautics, Commercial)

GOL'TSOV, V.

Airport is a construction site. Grazhd.av. 18 no.1:26-27 Ja '61.
(MIRA 14:3)

1. Spetsial'nyy korrespondent zhurnala "Grazhdanskaya aviatsiya",
Moskva—Stalinabad.
(Stalinabad—Airports)

GOL'TSOV, V. (Murmansk)

Winged sledges. Grazhd.av. 18 no.8:24-25 Ag '61. (MIRA 14:8)

1. Spetsial'nyy korrespondent zhurnala "Grazhdanskaya aviatsiya".
(Kola Peninsula--Aeronautics in wildlife census)

~~GOL'TSOV, Y.~~

Aside main airlines. Grazhd.sv. 19 no.7:24 J1 '62.

(MIRA 15:8)

(Title--Aeronautics, Commercial)

GOL'TSOV, V.

They say that conscience does not bother you. Grashd.av. 19
no.9:15 B '62. (MIRA 16:1)

(Airplanes--Maintenance and repair)

GOL'TSOV, V.; VDOVENKO, B.

Happy journey. Grazhd.av. 19 no.10:14-15 0 '62.

(MIRA 16:2)

(Aeronautics, Commercial—Flights)

VOLOKITIN, I.; GOL'TSOV, V.

~~Stony front. Grashd. av. 20 no.3:4-5~~ Mr '63. (MIRA 16:4)

(Air pilots)

GOL'TSOV, V.

Seconds of life. Grazhd. av. 20 no.6:4-5 Je '63. (MIRA 16:8)

(Air pilots)

GOL'TSOV, Vladimir, komandir korablya; MAKAROV, Fedor Timofeyevich;
BORDACHEV, Vladimir, komandir samoleta, komсомолец;
NAYDENOVA, Valentina; IVANOV, Boris Mikhaylovich;
KULIKOVA, Galina, inzh; KARPICHEVA, Alla, inzh.-ekonomist;
GRIGOR'YEV, G.

By the call of conscience. Grashd. av. 21 no.6:12-13 Je '64.

(MIRA 17:8)

1. Sekretar' podrazdeleniya Vsesoyuznogo Leninskogo kommunisti-
cheskogo soyusa molodezhi pri Bykovskom ob'yedinennom aviapodras-
delenii (for Gol'tsov). 2. Zamestitel' komandira Bykovskogo
ob'yedinennogo aviapodrazdeleniya po politicheskoi aviatsii
spetsial'nogo primeneniya (for Makarov). 3. Chlen komсомол'skogo
shtaba "Za kul'turnoye obsluzhivaniye passazhirov" pri Bykovskom
ob'yedinennom aviapodrazdelenii (for Naydenova). 4. Nachal'nik
linaynoy ekspluatatsionno-remontnoy masterskoy Bykovskogo
ob'yedinennogo aviapodrazdeleniya (for Ivanov). 5. Chleny
komiteta Vsesoyuznogo Leninskogo kommunisticheskogo soyusa
molodezhi, Bykovskoye ob'yedinennoye aviapodrazdeleniye (for
Kulikova, Karpicheva). 6. Spetsial'nyy korrespondent zhurnala
"Grashdanskaya aviatsiya" (for Grigor'yev).

GOL'TSOV, V. (Kulshneva, Kurskoy oblasti)

From the forward edge. Grazhd. av. 21 no.8:18-19 Ag '64.
(MIRA 18:4)

1. Spetsial'nyy korrespondent zhurnala "Grazhdanskaya aviatsiya".

GOL'TSOV, V.

The steppe expanse. Grazhd. av. 21 no.11:12-13 N '64.

(MIRA 18:3)

1. Spetsial'nyy korrespondent zhurnala "Grazhdanskaya aviatsiya."

VOLOKITIN, I.; GOLITSOV, V.; YEREMIN, S.; SEMENOV, M.

Photo, events, people. Kryn. rod. 16 no.3:20-21 Mr '65.

(MIRA 18:5)

1. Spetsial'nyye korrespondenty zhurnala "Grazhdanskaya aviatsiya"
(for Volokitin, Gol'tsov).

GOL'TSOV, V.

A man who has flown around the planet. Grazhd. av. 21 no. 12:
3 D '64. (MIRA 18:12)

VOLOKITIN, I.; GOL'TSOV, V.

That's how it was. Grashd. av. 22 no.1:4-7 Ja '65.
(MIRA 18:11)

1. Spetsial'nyye korrespondenty zhurnala "Grashdanskaya
aviatsiya".

GOL'TSOV, V. A. Cand. Tech. Sci.

Dissertation: "Calculation of Secondary-Electron Multipliers in Respect to Frequency."
Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov, 14 Mar 47.

SO: Vechernyaya Moskva, Mar, 1947 (Project #17836)

GOL'TSEV, V. A. ed.

A collection of articles on the technology of vacuum tubes. Moskva, Gos. energ. izd-vo,
1948. 139 p. (49-51242)

TR7372.73G6

HYABOV, R.A.; GOLITSOV, Y.A.

Effect of structure and heat treatment on hydrogen penetration
in steels. Trudy Ural. politekh. inst. no.92:101-109 '59.
(MIRA 13:12)

(Steel--Hydrogen content)

S/137/61/000/012/090/149
A006/A101

AUTHORS: Gol'tsov, V. A., Ryabov, R. A.

TITLE: On flake-preventing treatment of steels

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1961, 43, abstract
120348 ("Tr. Ural'skogo politekhn. in-ta", 1961, v. 114, 134 - 137)

TEXT: On the basis of studies performed on the diffusion rate of H in steel of different structure, the authors explain the positive effect of "oscillation" heating of 30 Kh3A (30KhN2A) steel to eliminate flake sensitivity. It is proved that hydrogen permeability for products of the second stage of austenite decomposition is by about 20% higher at 600 - 650°C than for products of the first stage of decomposition; it is also shown that carbide coagulation increases hydrogen permeability. Therefore oscillating heating of 30KhN2A type steel at 300 - 600°C, entails the elimination of H from the steel and removes flake sensitivity.

T. Fedorova

[Abstracter's notes: Complete translation]

Card 1/1

S/126/62/013/006/005/018
E111/E352

AUTHORS: Gol'tsov, V.A., Gal'd, P.V. and Kotik, E.M.

TITLE: Influence of phase work-hardening of austenite on its permeability to hydrogen

PERIODICAL: Fizika metallov i metallovedeniye, v. 13, no.6, 1962, 860 - 868

TEXT: Cyclic $\gamma \rightarrow \alpha \rightarrow \gamma$ heat-treatment stabilizes and hardens austenite and has an anomalous effect on the coefficient of self-diffusion of iron. The present investigation was undertaken because it was not clear how such treatment affected the permeability of steels to hydrogen. Permeability was studied on Fe-Ni (12.6 and 25% Ni) alloys at 280 - 1020 °C. It was found that the permeability of α -phase with a martensitic structure changes exponentially with temperature up to the A_s point, the activation energy being 17-19 kcal/mole. Equilibrium austenite has activation energies for the hydrogen-penetration process of 28-31 kcal/mole; the value depends little on composition. The reverse martensite process, leading to the formation of hardened austenite, greatly complicates the hydrogen-
Card 1/2

Influence of

S/126/62/013/006/005/018
E111/E352

migration stage and causes the activation energy to increase. The degree of phase work-hardening of austenite and the activation energy for hydrogen penetration are clearly related, apparently because fracture of mosaic blocks and growth of internal stresses complicates the hydrogen diffusion stage in austenite. It is thus possible that the development of intragranular boundaries leads to an increase in defect concentrations which act as hydrogen "traps" with a higher energy barrier as regards movement along them. The first $\gamma \rightarrow \alpha \rightarrow \gamma$ transformation cycle has an especially great effect on permeability to hydrogen; later, the effect is usually negligible. Activation energy changes appreciably if not less than 50% $\gamma \rightarrow \alpha$ transformation is achieved in the direct martensite transformation; at 75% the effects are especially great. There are 4 figures and 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im.
S.M. Kirova (Ural Polytechnical Institute im.
S.M. Kirov)

SUBMITTED: November 16, 1961

Card 2/2

ACCESSION NR: AR4041600

S/0137/64/000/005/1019/1020

SOURCE: Ref. zh. Metallurgiya, Abs. 51121

AUTHOR: Gel'd, P. V.; Gol'tsov, V. A.; Sklyuyev, P. V.; Kvater, L. I.

TITLE: Influence of coagulation of carbides on water permeability of steel

CITED SOURCE: Sb. Vliyaniye vodoroda na sluzhebn. svoystva stali Irkutsk, 1963, 140-147

TOPIC TAGS: steel, water penetration, hydrogen penetration, carbide, carbide coagulation

TRANSLATION: Regularities of hydrogen permeability of steel 80KhN1M and steel 34KhN1M with initial structures of martensite, bainite and perlite in interval of 280 - 900° with pressure drop of 10- 760 mm Hg for 20, 40, 60 and 100 hours were studied. Water permeability of steel with initial structure of martensite and bainite annealed at 650°, turns out to be higher than for steel

Card 1/2

ACCESSION NR: AR4041600

with platy separations of carbides with initial perlitic structure as a result of coagulation of carbides. Maximum water permeability of steel 80KhN1M annealed at 650° is observed during holding > 20 hr of samples with initial perlite structure and > 40 hr of samples with initial structure of martensite and bainite at the same temperature. Conversion of platy form of carbides into granular noticeably increases water permeability in even greater measure, the higher the content of C in steel. For increase of water permeability of steel it is considered expedient first to carry out decomposition of austenite up to obtaining of martensite of lower bainite, and then to increase temperature to 650 - 680° for the purpose of formation of structure of granular cementite.

SUB CODE: MM

ENCL: 00

Card 2/2

1. 姓名: 王德成
 2. 性别: 男
 3. 年龄: 45
 4. 职业: 教师
 5. 籍贯: 湖南长沙
 6. 民族: 汉族
 7. 婚姻状况: 已婚
 8. 子女情况: 一子一女
 9. 健康状况: 良好
 10. 兴趣爱好: 读书、运动
 11. 教育程度: 本科
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 15. 住址: 长沙市岳麓区岳麓大道123号

1. The first step in the process is to identify the problem. This involves gathering information about the situation and the people involved.

A/0148/63/000/004/0058/0000

10-10-68 10:30 A.M. 62-1117-2014

CONCLUSIONS

8. INDEX. IVU2. Chernov et al., 1963, 98-103

SOLUBLE - normal active carbon; hydrogenability of metals; hydrogen sulfide; hydrogen peroxide; steel; stainless steel; active hydrogen; hydrogen.

[illegible]

Question: How many patients were in the study? (How patients were included?)

10-10-68

17 Jan 63

1983-84

PERIODS

SECRET

OTHER: 001

APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515830004-5"

GEL'D, P.V.; GOL'TSOV, V.A.; SHTEINBERG, M.M.

Effect of intraphase hardening on hydrogen absorption in manganese austenite. Fiz. met. i metalloved. 16 no.3:394-402 S '63.

(MIRA 16:11)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

GEL'D, P.V.; GOL'TSOV, V.A.; RYABOV, R.A.; SHTEYNBERG, M.M.

Interaction of the parameters of hydrogen absorption by
precipitation-hardened austenite. Fiz. met. i metalloved. 16
no.4:610-611 O '63. (MIRA 16:12)

1. Ural'skiy politekhnicheskii institut imeni Kirova.

ACCESSION NR: AP4033703

S/0148/64/000/004/0119/0123

AUTHOR: Gel'd, P. V.; Gol'tsov, V. A.; Shteynberg, M. M.; Kosheleva, V. Yu.

TITLE: The effect of Plastic Deformation and Subsequent Annealing on the Rate of Hydrogen Penetration in Austenite

SOURCE: ^{VUZ} IVUZ. Chernaya metallurgiya, no. 4, 1964, 119-123

TOPIC TAGS: plastic deformation, annealing, interrupted quenching, Fe Ni alloy, induction furnace, hydrogen permeability, Ni austenite, activation energy, pre exponential factor, polyterm, crystal structure imperfection, complicated migration

ABSTRACT: The authors investigated the diffusion of hydrogen in an Fe-29% Ni alloy melted in a 60 kg induction furnace for the purpose of determining the water permeability of work-hardened austenite. The specimens were reduced by 25% since this degree of reduction intensified the work-hardening of Ni austenite. Quenching from 365 C affects permeability and a disruption appears on the polytherm below which the process is characterized by activation energy and a pre-exponential factor corresponding to equilibrium austenite. Annealing at continuously

Cord 1/3

ACCESSION NR: AP4033703

increasing temperatures lowered the parameters of austenite permeability, as calculated, from the high-temperature sections of the polytherm to values which approximated those calculated from the low-temperature sections. In order to obtain data which would supplement earlier studies of the imperfections accounting for the anomalous changes in hydrogen permeability, the authors investigated the recovered hardness during a 30-minute annealing of 10 x 10 x 2.5 specimens reduced by 27%. At 500 C hardness was recovered by 18% and activation energy of permeability by 32%. The authors conclude that the recovery of diffusion characteristics occurs within a lower temperature range than the recovery of hardness. Hydrogen permeability parameters, as affected by plastic deformation and annealing, have an exponential relationship $p_0 \propto \exp E$ analogous to that determined in earlier studies for phase-hardened austenite. Experimental results are explained in the light of an earlier theory on crystal lattice imperfections which affect diffusion by entraining hydrogen and making migration in their vicinity difficult. Orig. art. has:

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Urals Polytechnic Institute)

SUBMITTED: 28Jul63

DATE ACQ: 07May64

ENCL: 00

Card 2/3

ACCESSION NR: AP4033703

SUB CODE: MM

NO REF SOV: 009

OTHER: 001

Card

3/3

ACCESSION NR: AB4029007

S/0126/64/017/003/0469/0470

AUTHOR: Shteynberg, M. M.; Gol'tsov, V. A.; Gel'd, P. V.; Zhuravlev, L. G.

TITLE: A change in the mechanical properties of austenite and the parameters of its hydrogen permeability as a result of phase cold hardening in $\gamma \rightarrow \epsilon \rightarrow \gamma$ conversion

SOURCE: Fizika metallov i metallovdeniye, vol. 17, no. 3, 1964, 469-470

TOPIC TAGS: austenite, hydrogen permeability, mechanical properties, phase cold hardening, $\gamma \rightarrow \epsilon \rightarrow \gamma$ conversion

ABSTRACT: In a previous paper, the authors have shown that phase cold hardening in a $\gamma \rightarrow \epsilon \rightarrow \gamma$ conversion increases substantially the activation energy and the pre-exponential multiplier of the process of hydrogen penetration in manganese austenite. Similar properties of hydrogen permeability may be satisfactorily explained provided that the defects of the crystal lattice are contained in hydrogen "traps," in the vicinity of which the elementary act of diffusion becomes complex. A description of the experiment is given; the results are plotted on a graph; the result of phase conversion changed not only the mechanical, but also the diffusion properties of austenite. Changes may also be expected in many of its other physical properties.

Card 1/2

ACCESSION NR: AP4029007

The concept of "phase cold hardening" should be considered in a much broader form than simple mechanical hardening during phase conversions. Orig. art. has: 1 figure.

ASSOCIATION: Ural'skiy politekhnicheskii institut im. S.M. Kirova (Ural Polytechnical Institute)

SUBMITTED: 10Jly63

DATE ACQ: 27Apr64

ENCL: 00

SUB CODE: NL

NO REF SOV: 002

OTHER: 000

Card 2/2

1 01795-66 DIT(n)/DIT(v)/DIT(c)/DIT(t)/DIT(s)/DIT(b)/DIT(a) IJP(c) JD/BN/

ACCESSION NR: AF5020978

UR/0148/65/000/008/0102/0107

AUTHOR: Koshelova, V. Yu.; Gel'd, P. V.; Gol'tsov, V. A.

TITLE: Effect of phase hardening on the hydrogen permeability of an iron-nickel alloy

SOURCE: IVUZ. Chernaya metallurgiya, no. 8, 1965, 102-107

TOPIC TAGS: iron nickel alloy, metal hardening, hydrogen, permeability measurement, hydrogen permeability, solid mechanical property, temperature dependence, electric resistance, crystal lattice defect

ABSTRACT: A study was made of the temperature dependence (20-1110 C) of the hydrogen permeability, the yield and tensile strengths, and the hardness of an Fe-Ni alloy (28.6% Ni) in equilibrium and hardened conditions. Phase hardening of the Ni austenite significantly increased its hydrogen permeability and the energy of activation E of this process: at 350-390 C, E (≈ 45 kcal/mol) was about 1.5 times greater than E for austenite in equilibrium conditions. Recovery of the diffusion characteristics of the alloy was especially intense in the 400-500 C range. Increasing the annealing temperature further to 700-850C had little effect

Card 1/2

L 01795-66

ACCESSION NR: AP5020978

on permeability and E. Phase hardening significantly increased yield strength, tensile strength and hardness, but had only a little effect on the modulus of elasticity of the alloy. Recovery of mechanical characteristics developed strongly at ~600-700C. The increase in electric resistance with temperature increase of the phase hardened austenite stopped at about 440 C. The coincidence of the recovery of electric resistance and hydrogen permeability is attributed to the possible hypersensitivity of these processes to similar defects. The mechanical and diffusion characteristics are sensitive to different defects in the crystal lattice. The first is apparently determined by the subgrain structure while the second is determined by the nature and distribution of vacancies, dislocations and other similar defects in the crystal lattice. Orig. art. has: 3 figures

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: 11Jul64

ENCL: 00

SUB CODE: MM, SS

NR REF SOV: 008

OTHER: 001

Cord 2/2

1. 2024-16 EIT(a)/T/ENP(b)/ENP(c)/ENP(d)/ENP(e) LJP(c) JU/HB
 ACC NR: APS027136 SOURCE CODE: UR/0126/65/020/004/0524/0530
 AUTHOR: Simakov, Yu. P.; Gel'd, P. V.; Steynberg, M. M.; Gol'tsov, V. A.
 ORG: Ural Polytechnical Institute in S. M. Kirov (Ural'skiy polite-
 khnicheskii inst-ut)
 TITLE: The effect of ordering on the hydrogen permeability of Ni₃Mn
 SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, 524-530
 TOPIC TAGS: permeability, hydrogen, nickel alloy, manganese alloy,
 ordered alloy
 ABSTRACT: The alloy was melted in vacuum in an induction furnace from
 technically pure components and was poured (also in vacuum) into ingots
 with a gross section 40 x 40 mm. The ingots were annealed for one hour
 at 1100°C and forged into rods (30 x 30 mm). The alloy contained
 24.52% manganese, 0.30% silicon, 0.05% carbon, 0.03% phosphorus, and
 0.005% sulfur. The degree of ordering of the samples, subjected to
 different treatments, was evaluated on the basis of the results of
 dilatometric and magnetic tests. The hydrogen permeability was studied
 on film type samples by the steady state flow method. These studies
 showed that the ordering temperature of the alloy agreed well with
 Card 1/3 UDC: 519.12+669.788

1 8024-66
ACC NR. AP5027136

Literature data near 520°C . The kinetics of the ordering process of the alloy was further studied at various temperatures. Before the experimental tests, the diffusion samples were heated to 1000°C , held at this temperature for one hour, quenched in water, and then ordered for 12 (or 100) hours at 1000°C . The hydrogen permeability was studied during stepwise heating (from 350 to 950°C) and cooling. On heating from 350 to 400°C , the hydrogen permeability of Ni-Mn increases noticeably. Above 400°C , the temperature coefficient of hydrogen penetration falls substantially, and near 450°C returns to zero. Further increase in the temperature leads to a decrease in the hydrogen permeability, which reaches a minimum at $510-520^{\circ}\text{C}$, that is near T_g . Further heating of the alloy is accompanied by a rapid increase in the hydrogen penetration rate. However, between 620 and 900°C , there is observed a marked decrease in the hydrogen permeability, replaced at higher temperatures by an exponential rise of the hydrogen permeability with temperature. The transition changes in the hydrogen permeability of Ni-Mn during heating and cooling are bound up with the destruction and formation of long-range order, and are determined by the kinetic characteristics of these processes. An ordered alloy has a higher hydrogen permeability than an unordered one. Above the temperature of the "order-unorder" transition, the rate of hydrogen penetration depends on the temperature in a complicated fashion and obeys an exponential

end 2/3

1 8094-66

ACC. NO. AP-5027136

relationship only above 900°. It can be assumed that the anomalous changes in the hydrogen permeability above T₀ are bound up with the nature of the short-range order, and with the degree of the defective-ness of the lattice of the alloy. Orig. art. has: 3 figures. 3

SUB CODE: 20/ SUBM DATE: 30 Nov 64/ ORIG REF: 011/ OTH REF: 005

CAS 3/3/64

ARTIST: Gol'd, P. V.; Kuznetsov, Ye. P.; Shadrin, M. M.; Gol'tsov, V. A.

ORG: Ural Polytechnic Institute Im. S. M. Kirov (Ural'skiy politekhnicheskii inst.)

TITLE: Effect of ordering on the hydrogen absorption of the alloys of iron with cobalt

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 1, 1966, 148-150

TOPIC TAGS: ordered alloy, iron alloy, cobalt alloy, second order phase transition, hydrogen, temperature dependence

ABSTRACT: The statistical theory of the diffusion (and absorption) of interstitial atoms in the lattices of the alloys undergoing ordering processes claims that the anomalies of the temperature dependence of the diffusion coefficient D in the neighborhood of the temperature T_0 of the order-disorder transformation differ depending on whether the phase transformation is of the first or of the second kind. In the former case a sharp change in D and in the activation energy E of the process is to be expected whereas in the latter case only a change in E is to be expected. To verify whether the conclusions of this theory apply to alloys in which ordering occurs as a phase transformation of the second kind, the authors investigated hydrogen absorption in FeCo alloys (FeCo, FeCo + 1.5% Ti; Fe + 60% Co) by means of techniques

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UNC: 548.53

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ACC. NO. AP5005148

described earlier (Shtrom, Ya. P., et al. *Zh. fiz. khim.* 1965, 20, 4, 524; Ryabov, E. A., *Dokl. Akad. Nauk SSSR*, 1957, 4, 289, 1959, 7, 733). Repeated measurements of the rate of penetration of hydrogen into the austenitic alloy FeCo showed that in the 700-720°C temperature region, which is sufficiently close to T_0 , the curve of the temperature dependence of hydrogen absorption undergoes a sharp inflection; at temperatures below T_0 the alloy's ability to absorb hydrogen decreases much more rapidly; thus, there is no discontinuity in the temperature dependence of hydrogen absorption for the FeCo alloy is the neighborhood of T_0 and the inflection of the experimental curve is due to the change in diffusion parameters. Similar results were obtained for the alloys FeCo - 1.5% V and Fe - 50% Co. In all these cases the degree of short-range order was found to increase on cooling of the alloy below T_0 . Hence, when discussing the temperature dependence of hydrogen absorption for $T < T_0$, it is pointless to speak of the activation energy of the process as a quantity characterizing a fixed potential barrier. These experimental findings indicate that during the ordering of FeCo alloys the temperature coefficient of hydrogen absorption markedly increases. It is important to note that a reversed pattern was observed for Ni₃Sn (an alloy in which the ordering process takes place as a phase transformation of the first kind): ordering led to an increase in its hydrogen absorption and decrease in its temperature coefficient. Thus, the pattern of variation in the ability to absorb hydrogen in the neighborhood of T_0 essentially depends on whether the ordering process is a phase transformation of the first or second kind. It is worth noting that a distinctive change in the rate of hydrogen absorption was observed between 350 and 500°C during

End 2/3

1. Title
AND NO. APPROXIMATE

the study of both the equilibrium (Fig. 1) and other FeCo alloys; as is known, it is exactly within this range of temperatures that anomalies in various other physical properties of the alloys have previously been observed. This phenomenon may be associated with the ordering kinetics; at any rate, it deserves further investigation. Orig. art. has 1 figure and 1 formula.

2. CODE: 11, 13, 20/ SUBJ DATA: 220445/ ORIG REF: 007/ OTH REF: 001

Co 13/3574/

GOL'TSOV, V.S., inzh.; ZGRZHEBLOVSKIY, E.A., inzh.

Effect of the location of the grounding of discharges in mountainous regions on the operation of automatic block systems.
Autom., tele. i svyaz' 5 no.3:40-41 Mr '61. (MIRA 14:9)

1. Laboratoriya signalizatsii i svyazi Omskoy dorogi (for Gol'tsov). 2. Laboratoriya energosnabzheniya Omskoy dorogi (for Zgrazheblowskiy).

(Electric railroads—Signaling—Block system)
(Lightning protection)

ZHELTUKHOV, G.I.; GOL'TSOV, V.S.

Our methods in servicing automatic equipment in railroad stations. Avtom., telem. i sviaz' 9 no.3:29-31 Mr '65.

(MIRA 18:11)

1. 'vestitel' nachal'nika Omskoy distantzii Zapadno-Sibirskoy dorogi (for Zheltukhov). 2. Starshiy inzh. Omskoy distantzii Zapadno-Sibirskoy dorogi (for Gol'tsov).

ACC NR: AT7004079

SOURCE CODE: UR/3244/66/000/004/0069/0071

AUTHOR: Kharlampovich, G.D.; Gol'tsova, L.F.

ORG: Urals Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

TITLE: Preparation of stabilizers for plastics, synthetic resins, and petroleum products using methylnaphthalenes derived from coal tar

SOURCE: Dnepropetrovsk. Khimiko-tekhnologicheskii institut. Khimicheskaya tekhnologiya, no. 4, 1966, 69-71

TOPIC TAGS: naphthalene, rubber stabilizer, chemical stabilizer, stabilizer additive, antioxidant additive

ABSTRACT: 1-Methyl-2-naphthol, 1-methyl-4-naphthol, and 1-methyl-8-naphthol were prepared and their antioxidative properties were studied to determine the possibility of the use of these coal tar derivatives as readily available stabilizers of aviation fuels, lubricants, resins, polymers, and food products. The antioxidative activity of the methylnaphthols along with naphthols and flexzone were studied by measuring the induction period in air oxidation of paraffin at $170 \pm 0.1^\circ\text{C}$ with an air consumption rate of 6 ml/g·min. The induction period was determined by iodometric titration of the peroxides formed. The results for a 0.1% concentration of the additives are given in the table. The induction period decreased

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UDC: none

SUB CODE: 07/ SUBM DATE: none
ATD PRESS: 5114

Card 2/2

[illegible]

100

L 04250-67 EWT(m)/T DJ

ACC NR: AP6005398

(N)

SOURCE CODE: UR/0413/66/000/001/0153/0153

AUTHOR: Yutkin, L. A.; Gol'tsova, L. I.

ORG: none

TITLE: A method for obtaining superhigh hydraulic pressures and a device for implementing this method. Class 58, No. 119074

SOURCE: Izobreteniya, promyshlennyye obrastay, tovarnyye znaki, no. 1, 1966, 153

TOPIC TAGS: superhigh pressure, hydraulic pressure amplifier, spark shock wave

ABSTRACT: This Author Certificate presents a method for obtaining superhigh hydraulic pressures in accordance with Author Certificate No. 105011. In order to provide constantly increasing pressures, spark discharges alternating in a given sequence are generated in a previously compressed and successively compressible liquid. The device is made in the form of a cylindrical hydraulic chamber either divided into sections or without sections. One end of the chamber is connected to pipes which feed the liquid, and the other end of the chamber is connected to a receiver. The spark gaps are positioned in this receiver and are aligned either along the chamber at a specified distance from one another or are placed in each section of the chamber. To provide a shifting of the liquid to the receiver side,

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UDC: 621.226.621.7.044.4

L 04250-67

ACC NR: AP6005398

check valves are used, mounted between the sections. The sections of the chamber are divided by baffles with holes instead of by valves. The shape of the device is controlled by the need to impart a direction to the shock wave and to prevent the shifting of the liquid to the receiver side. The sections are given the shape of mutually intersecting parabolas (in cross section). To provide a given sequence of firing by the discharges of the whole family of spark gaps, a tumbler switch or a firing device is used.

SUB CODE: 13/ SUBM DATE: 15Apr50

Electrohydraulic Effect 18

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GOL'TSOVA, N.D.; MEYSEL', M.N.

Effect of ionizing radiation on amination, deamination and transamination processes. Dokl. AN SSSR 118 no.1:75-77 Ja-F '58. (MIRA 11:3)

1. Institut mikrobiologii Akademii nauk SSSR. Predstavleno akademikom V.N.Shaposhnikovym.

(AMINATION) (X-RAYS--PHYSIOLOGICAL EFFECT)
(CELL METABOLISM)

PETROV, K.A.; NIFANT'YEV, E.Ye.; GOL'TSOVA, R.G.

Interesterification of methyl phosphonites. Zhur.ob.khim.
31 no.7:2367-2370 J1 '61. (MIRA 14:7)
(Phosphonic acid) (Esterification)

PETROV, K.A.; NIFANT'YEV, E.Ye.; GOL'TSOVA, P.G.

Interesterification of monoethyl methylphosphinite with glycols.
Zhur.ob.khim. 31 no.7:2370-2373 J1 '61. (MIRA 14:7)
(Phosphinic acid) (Esterification) (Glycols)

25371

S/079/61/031/008/009/009
D215/D304

5.3630

AUTHORS: Petrov, K.A., Nifant'ev E.Ye., Gol'tsova, R.G.
and Gubin, G.V.

TITLE: Investigating the chemical properties of acid bis-
esters of ethylene glycol and methylphosphine acid

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 8, 1961, 2732-2735

TEXT: In previous publications, the authors have shown that acid bis-
methylphosphonites could be prepared by esterification of the mono-
ethylester of methylphosphinic acid with glycols. In the present in-
vestigations they studied some reactions of the simplest of these com-
pounds, obtained by esterification with ethylene glycol. The follow-
ing reactions were studied. 1) Oxidation of bismethylphosphinite
[Abstractor's note: Called subsequently "the starting product"] with
nitrogen oxides to the corresponding ester of bismethylphosphonic acid,
according to scheme (NI). The obtained product is highly hygroscopic
and reacts as a dibasic acid. 2) The reaction of the starting product

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Investigating the chemical...

with sulfur; they did not succeed with the product itself, only with its sodium salt which was obtained from the product and sodium methoxide in dry methyl alcohol and could be isolated. (N2). 3) The reaction with dibutyldisulfide and methylthiocyanate (N3). 4) chlorination of the starting product which was successful with chlorine, but not with SO_2Cl_2 ; only a monochloride was obtained with chlorine which was oxidized to a corresponding phosphonic acid (N4). 5) Aminomethylation with tetraethyldiaminomethylene; with equimolar amounts of reagents they obtained monomethyl diethylamino phosphonate (N5). In the last two reactions the two phosphonic groups showed a different reactivity, only one of them taking part in the reaction. There are 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: L.W. Daasen, J.Am.Chem.Soc. 80,5301, 1958. E.K. Fields, J.Am. Chem.Soc. 74, 1528, 1952.

SUBMITTED: July 27, 1960

Card 2/2

PETROV, K.A.; NIFANT'YEV, E.Ye.; GOL'TSOVA, R.G.

Re-esterification of phosphinothioic and phosphonothioic esters
with alcohols. Zhur.ob.khim. 31 no.10:3174-3177 0 '61.

(MIRA 14:10)

(Phosphonothioic acid) (Phosphinothioic acid) (Alcohols)

PETROV, K.A.; NIFANT'YEV, E.Ye.; GOL'TSOVA, R.G.; BELAVENTSEV, M.A.;
KORNEYEV, S.M.

Esterification of phosphorous and phenylphosphinic acids. Zhur,-
ob.khim. 32 no.4:1277-1279 Ap '62. (MIRA 15'4)
(Phosphorous acid) (Phosphinic acid) (Esterification) .

5.3480

43311

S/079/62/032/011/008/012
D204/D307

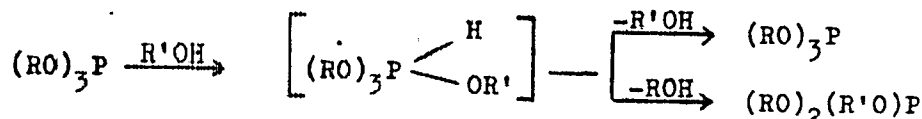
AUTHORS: Petrov, K.A., Nifant'yev, E.Ye., and Gol'tsova, R.G.
TITLE: Peresterification of phosphites and phosphinites with substituted alcohols
PERIODICAL: Zhurnal obshchey khimii, v. 32, no. 11, 1962, 3716 - 3720

TEXT: The peresterification of the simpler esters of phosphorous acid and methyl-, phenyl-, and dipropylphosphinous acids was studied, using amino-ethanol, halo- and cyanhydrins, furfuryl and tetrahydrofurfuryl alcohols and with methyl cellosolve since the literature concerning such reactions is very scarce. In a typical experiment a mixture of the ethyl ester of the phosphorous (or phosphinous) acid and the substituted alcohol was heated, under an inert atmosphere, to 150-185°C, until the calculated quantity of EtOH distilled off. The reaction mixture was held at that temperature for a further 10-15 min, at 20-40 mm Hg, and was then distilled to give the corresponding phosphite or phosphinite of the substituted alcohol. Na or H_3PO_4 were used as catalysts. Furfuryl-di-
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Peresterification of phosphites ...

S/079/62/032/011/008/012
D204/D307

propyl- and - cyanoethyldipropylphosphinites were quantitatively oxidized to the corresponding phosphonates with a current of dry O_2 . The rates and yields of the peresterifications were lower when the substituents in the alcohol were more electrophilic and when they were closer to the OH-carrying carbon atom. These data are in agreement with the mechanism showed earlier by the authors, i.e.:



Those initial phosphites and phosphinites which possessed more strongly electrophilic substituents reacted more readily with the alcohols. Thus di-β-chloroethylphosphite and di-β-fluoroethylphosphite were reacted with decyl alcohol, at respectively 140-150°C and 120-130°C, in the presence of H_3PO_3 , to give didecylphosphite in 80 and 85 % yields. There is 1 table.

SUBMITTED: December 14, 1961
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D204/D307

63630
AUTHORS:

Petrov, K.A., Nifant'yev, E.Ye., Gol'tsova, R.G.,
Shchegolev, A.A., and Bushmin, B.V.

TITLE:

Synthesis and peresterification of diphenyl phosphite

PERIODICAL:

Zhurnal obshchey khimii, v. 32, no. 11, 1962,
3725 - 3727

TEXT: The interactions of diphenyl phosphite with aliphatic alcohols were studied since the alcoholysis of diethyl and other simple phosphites (to higher phosphites) and phosphinites requires, in some cases, inconveniently high temperatures (this journal, p. 3716). Dialkyl phosphites $(RO)_2POH$, where $R = C_4H_9$, $iso-C_5H_{11}$, C_6H_{13} , C_8H_{17} , C_9H_{19} , $C_{10}H_{21}$, $ClCH_2CH_2$, and $C_2H_5OC(O)CH_2$, were prepared in 91-96 % yields by adding 2 moles ROH to 1 mole $(PhO)_2POH$ and heating for 3-8 hours at $100^\circ C$, in the presence or absence of catalyst (Na). The high reactivity of diphenyl phosphite as compared to those of simple dialkyl phosphites is ascribed to (1) the existence

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diaryl phosphites,
and meta-cresols

ACCESSION NR: AT4033987

S/0000/63/000/000/0068/0072

AUTHOR: Petrov, K. A.; Nifant'yev, E. Ye.; Gol'tsova, R. G.; Korneyev, S. M.

TITLE: Polymers containing phosphorus. IX. Synthesis of acid polyalkylene phosphites, phosphates and thionphosphates

SOURCE: Geterotsephnyye vyssokomolekulyarnyye soyedineniya (Heterochain macromolecular compounds); sbornik statey. Moscow, Izd-vo "Nauka," 1963, 68-72

TOPIC TAGS: polymer, phosphorus containing polymer, polyalkylene phosphite, polyalkylene phosphate, polyalkylene thionphosphate, linear acid polyphosphite, polyphosphite synthesis, spatially discreet glycol, polyphosphite oxidation, polyphosphite alkylation

ABSTRACT: Linear acid polyphosphites were synthesized by reesterification of diethyl phosphite with spatially discreet glycols, then converted to polyalkylene phosphates by NO_2 oxidation or to thionphosphates by reaction with S. Successful syntheses (procedure described) were obtained with pentandiol-1,5, hexandiol-1,6, diethylene glycol, triethylene glycol, diethanolamine, pentafluoropentandiol-1,5, 1,4-3,6-dianhydrosorbitol, and p-dihydroxymethylbenzene. A neutral polythionphosphite was obtained by alkylation of an ammonium salt of polyalkylenethionphosphoric acid. We would like to thank S. A. Pavlova, associate at the INEOS AN SSSR, Card 1/2

ASSOCIATION: AT4033987

for her help in determining the molecular weights." Orig. art. has: 2 graphs, 1 table and 3 chemical equations.

ASSOCIATION: none

SUBMITTED: 19Jun62

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: OC

NO REF SOV: 012

OTHER: 003

Card 2/2

PETROV, K.A.; NIFANT'YEV, E.Ye.; GOL'TSOVA, R.G.; SOLNTSEVA, L.M.

Phosphorus-containing polymers. Part 7: Synthesis of polyphosphites and polyphosphinites by glycolysis of amides of trivalent phosphorus acids. Vysokom.soced. 5 no.11:1691-1695 N '63. (MIRA 17:1)